

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1-30. (Canceled)

31. (Previously Presented) An exposure method in which an exposure processing of a specific process is performed to each of photosensitive objects in a plurality of lots, the method comprising:

with respect to a first lot in the specific process,

calculating an estimate value of positional information of each of a plurality of divided areas on the photosensitive object, which is used to align each of the plurality of divided areas with a predetermined point, by a statistical computation using actual measurement values of positional information of a plurality of specific divided areas selected from the plurality of divided areas on the photosensitive object,

creating correction information used to correct a non-linear component of positional deviation amount of each of the plurality of divided areas from an individual fiducial position based on the actual measurement values of positional information of the plurality of specific divided areas and on the corresponding estimate value, and

performing exposure while controlling a position of the photosensitive object based on the estimate value of the positional information of each of the plurality of divided areas and on the correction information; and

with respect to every (K-1) lot of second and subsequent lots in the specific process, for a plurality of measurement divided areas on the photosensitive object that includes at least the plurality of specific divided areas,

calculating a non-linear component of positional deviation amount of each of the measurement divided areas from the individual fiducial position based on an

actual measurement value of positional information of each of the measurement divided areas and on the corresponding estimate value,

updating the correction information as needed in accordance with a magnitude of one of the calculated non-linear component of positional deviation amount of each of the measurement divided areas and a variation amount of the non-linear component within a threshold, but not updating the correction information with respect to the remaining lots, and

performing exposure while controlling the position of the photosensitive object based on the estimate value of positional information of each of the plurality of divided areas and on the correction information that is latest,

wherein the K is an integer not less than 2.

32. (Canceled)

33. (Previously Presented) The exposure method of Claim 31, wherein

when updating the correction information,

among the plurality of divided areas, at least a part of remaining divided areas excluding the measurement divided areas are new measurement divided areas, and

the correction information is updated using a non-linear component of positional deviation amount of each of the plurality of divided areas from the individual fiducial position calculated based on actual measurement values of positional information of all measurement divided areas including the new measurement divided areas and on the corresponding estimate value.

34. (Previously Presented) The exposure method of Claim 33, wherein

the new measurement divided areas are determined based on evaluation results of the non-linear component of positional deviation amount of each of the plurality of divided areas included in the correction information before update.

35. (Previously Presented) The exposure method of Claim 33, wherein the new measurement divided areas are determined based on evaluation results of one of the non-linear component of positional deviation amount of each of the measurement divided areas calculated with respect to the every (K-1) lot and the variation amount of the non-linear component.

36. (Canceled)

37. (Previously Presented) The exposure method of Claim 31, wherein as the plurality of measurement divided areas on the photosensitive object, only the plurality of specific divided areas can be designated.

38. (Previously Presented) The exposure method of Claim 31, wherein as the plurality of measurement divided areas on the photosensitive object, at least a part of remaining divided areas can be designated in addition to the plurality of specific divided areas.

39. (Previously Presented) The exposure method of Claim 31, wherein the correction information is one of a correction map and a correction function.

40-41. (Canceled)

42. (Previously Presented) The exposure method of Claim 35, wherein the evaluation of the non-linear component of positional deviation amount of each of the measurement divided areas is performed, taking into consideration at least one of magnitude and a dispersion degree of the non-linear component of positional deviation amount of each of the measurement divided areas in the correction information before update.

43. (Previously Presented) The exposure method of Claim 35, wherein the evaluation of the non-linear component of positional deviation amount of each of the measurement divided areas is performed using a predetermined evaluation function.

44. (Previously Presented) The exposure method of Claim 35, wherein
the plurality of divided areas on the photosensitive object are grouped into a
plurality of blocks in advance, and
the evaluation of the non-linear component of positional deviation amount of
each of the measurement divided areas is performed with respect to each block.

45-48. (Canceled)

49. (Previously Presented) A device manufacturing method including a
lithographic process wherein
in the lithographic process, an exposure processing of a specific process is
continuously or intermittently performed to each of photosensitive objects in a plurality of
lots by using the exposure method of Claim 31.

50. (Currently Amended) An exposure apparatus that performs an exposure
processing of a specific process to each of photosensitive objects in a plurality of lots, the
apparatus comprising:

a moving body that holds a photosensitive object;

a detection system that detects actual measurement values of positional
information of any divided areas among a plurality of divided areas on the photosensitive
object held on the moving body;

a computation device that calculates an estimate value of positional
information of each of the plurality of divided areas, which is used to align each of the
plurality of divided areas with a predetermined point, by a statistical computation using actual
measurement values of positional information of a plurality of specific divided areas among
the plurality of divided areas on the photosensitive object detected by the detection system;

a creating device that, with respect to a first lot in the specific process, creates
correction information used to correct a non-linear component of positional deviation amount

of each of the plurality of divided areas from an individual fiducial position based on the actual measurement values of positional information of the plurality of specific divided areas among the plurality of divided areas on the photosensitive object detected by the detection system and on the corresponding estimate value of positional information calculated by the computation device;

an updating device that, with respect to every (K-1) lot of second and subsequent lots in the specific process, for a plurality of measurement divided areas on the photosensitive object that includes at least the plurality of specific divided areas,

calculates a non-linear component of positional deviation amount of each of the measurement divided areas from an individual fiducial position based on an actual measurement value of positional information of each of the measurement divided areas detected by the detection device and on the corresponding estimate value, and

updates the correction information as needed in accordance with a magnitude of one of the calculated non-linear component of positional deviation amount of each of the measurement divided areas and a variation amount of the non-linear component within a threshold, but does not update the correction information with respect to the remaining lots, wherein the K is an integer not less than 2; and

a control device that controls a position of the photosensitive object via the moving body based on the estimate value of positional information of each of the plurality of divided areas and on the correction information that is latest, when exposing each of the plurality of divided areas.

51. (Previously Presented) The exposure apparatus of Claim 50, wherein the updating device comprises:

a determining device that determines at least a part of remaining divided areas excluding the measurement divided areas among the plurality of divided areas on the photosensitive object, as new measurement divided areas; and

a calculating device that calculates the non-linear component of positional deviation amount of each of the plurality of divided areas on the photosensitive object from the individual fiducial position, as new correction information, based on actual measurement values of positional information of all measurement divided areas including actual measurement values of positional information of the new measurement divided areas detected by the detection system and on the corresponding estimate value.

52. (Previously Presented) The exposure apparatus of Claim 51, wherein the determining device determines the new measurement divided areas based on evaluation results of one of the non-linear component of positional deviation amount of each of the measurement divided areas calculated by the updating device and the variation amount of the non-linear component.

53. (Canceled)

54. (Previously Presented) The exposure apparatus of Claim 50, wherein a first mode in which only the plurality of specific divided areas are designated as the plurality of measurement divided areas on the photosensitive object, and a second mode in which the plurality of specific divided areas and at least a part of remaining divided areas are designated as the plurality of measurement divided areas on the photosensitive object are settable.

55. (Previously Presented) The exposure apparatus of Claim 50, wherein the correction information is one of a correction map and a correction function.

56. (Previously Presented) The exposure apparatus of Claim 51, further comprising:

an evaluation device that, with respect to a plurality of measurement divided areas on the photosensitive object including at least the plurality of specific divided areas, evaluates a non-linear component of positional deviation amount of each of the measurement divided areas from an individual fiducial position based on the actual measurement value of positional information of each of the measurement divided areas detected by the detection system and on the estimate value of positional information calculated by the computation device, and determines at least one of the number of new measurement divided areas to be added and an arrangement thereof, based on the evaluation results.

57. (Previously Presented) The exposure apparatus of Claim 56, wherein the plurality of divided areas on the photosensitive object are grouped into a plurality of blocks in advance, and

the evaluation device performs the evaluation of the non-linear component of positional deviation amount of each of the measurement divided areas with respect to each block.

58-60. (Canceled)

61. (Previously Presented) A computer readable medium that stores a program that makes a computer for control of an exposure apparatus that performs an exposure processing of a specific process to each of photosensitive objects in a plurality of lots execute a predetermined processing, the program making the computer execute:

a procedure of, with respect to a first lot in the specific process,

calculating an estimate value of positional information of each of a plurality of divided areas on a photosensitive object, which is used to align each of the plurality of divided areas with a predetermined point, by a statistical computation using actual measurement values of positional information of a plurality of specific divided areas selected from the plurality of divided areas on the photosensitive object,

creating correction information used to correct a non-linear component of positional deviation amount of each of the plurality of divided areas from an individual fiducial position based on the actual measurement values of positional information of the plurality of specific divided areas and on the estimate value, and

performing exposure while controlling a position of the photosensitive object based on the estimate value of positional information of each of the plurality of divided areas and on the correction information; and

a procedure of, with respect to every (K-1) lot of second and subsequent lots in the specific process, for a plurality of measurement divided areas on the photosensitive object that include at least the plurality of specific divided areas,

calculating a non-linear component of positional deviation amount of each of the measurement divided areas from an individual fiducial position based on an actual measurement value of positional information of each of the measurement divided areas and on the estimate value,

updating the correction information as needed in accordance with a magnitude of one of the calculated non-linear component of positional deviation amount of each of the measurement divided areas and a variation amount of the non-linear component within a threshold, but not updating the correction information with respect to the remaining lots, and

performing exposure while controlling the position of the photosensitive object based on the estimate value of positional information of each of the plurality of divided areas and on the correction information that is latest,

wherein the K is an integer not less than 2.

62. (Canceled)